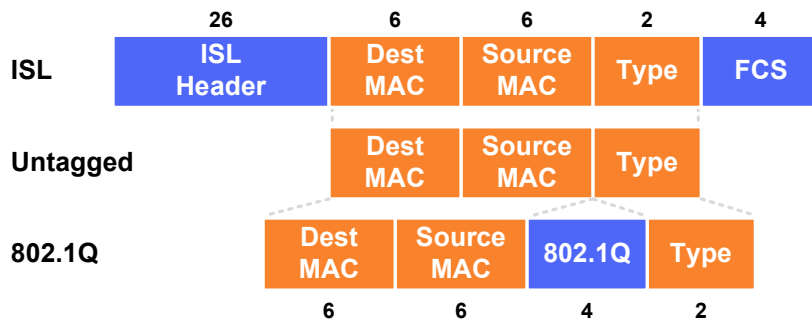


VLANs

Trunk Encapsulation



VLAN Creation

```
Switch(config)# vlan 100
Switch(config-vlan)# name Engineering
```

Access Port Configuration

```
Switch(config-if)# switchport mode access
Switch(config-if)# switchport nonegotiate
Switch(config-if)# switchport access vlan 100
Switch(config-if)# switchport voice vlan 150
```

Trunk Port Configuration

```
Switch(config-if)# switchport mode trunk
Switch(config-if)# switchport trunk encapsulation dot1q
Switch(config-if)# switchport trunk allowed vlan 10,20-30
Switch(config-if)# switchport trunk native vlan 10
```

SVI Configuration

```
Switch(config)# interface vlan100
Switch(config-if)# ip address 192.168.100.1 255.255.255.0
```

VLAN Trunking Protocol (VTP)

Domain

Common to all switches participating in VTP

Server Mode

Generates and propagates VTP advertisements to clients; default mode on unconfigured switches

Client Mode

Receives and forwards advertisements from servers; VLANs cannot be manually configured on switches in client mode

Transparent Mode

Forwards advertisements but does not participate in VTP; VLANs must be configured manually

Pruning

VLANs not having any access ports on an end switch are removed from the trunk to reduce flooded traffic

VTP Configuration

```
Switch(config)# vtp mode {server | client | transparent}
Switch(config)# vtp domain <name>
Switch(config)# vtp password <password>
Switch(config)# vtp version {1 | 2}
Switch(config)# vtp pruning
```

Trunk Types

	802.1Q	ISL
Header Size	4 bytes	26 bytes
Trailer Size	N/A	4 bytes
Standard	IEEE	Cisco
Maximum VLANs	4094	1000

VLAN Numbers

0 Reserved	1004 fdnet
1 default	1005 trnet
1002 fddi-default	1006-4094 Extended
1003 tr	4095 Reserved

Terminology

Trunking

Carrying multiple VLANs over the same physical connection

Native VLAN

By default, frames in this VLAN are untagged when sent across a trunk

Access VLAN

The VLAN to which an access port is assigned

Voice VLAN

If configured, enables minimal trunking to support voice traffic in addition to data traffic on an access port

Dynamic Trunking Protocol (DTP)

Can be used to automatically establish trunks between capable ports (insecure)

Switched Virtual Interface (SVI)

A virtual interface which provides a routed gateway into and out of a VLAN

Switch Port Modes

trunk

Forms an unconditional trunk

dynamic desirable

Attempts to negotiate a trunk with the far end

dynamic auto

Forms a trunk only if requested by the far end

access

Will never form a trunk

Troubleshooting

```
show vlan
```

```
show interface [status | switchport]
```

```
show interface trunk
```

```
show vtp status
```

```
show vtp password
```